WHAT IS CLAIMED IS:

1. A method of preparing an implant, comprising:

subjecting a substrate to a gas-plasma treatment; and

exposing the substrate to living cells, wherein a portion of the living cells become coupled to the substrate; and

wherein the living cells coupled to the treated substrate produce more of a cellular product than living cells coupled to an untreated substrate.

2. The method of claim 1, wherein the substrate comprises a biocompatible material.

3. The method of claim 1, wherein the substrate comprises a polymeric material.

4. The method of claim 1, wherein the substrate comprises a bioresorbable polymeric material.

5. The method of claim 1, wherein the substrate comprises a polylactide polymeric material.

6. The method of claim 1, wherein the substrate comprises a three-dimensional matrix.

7. The method of claim 1, wherein the substrate comprises a planar solid.

8. The method of claim 1, wherein the substrate comprises a nonplanar solid.

9. The method of claim 1, wherein the implant is a medical implant.

10. The method of claim 1, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas, wherein the reactive gas comprises oxygen.

11. The method of claim 1, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas, wherein the reactive gas consists essentially of oxygen.

12. The method of claim 1, wherein a duration of the gas-plasma treatment is from about 1 minute to less than about 5 minutes.

13. The method of claim 1, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a temperature of less than about 50 °C.

14. The method of claim 1, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a pressure between about 0.01 torr and about 10 torr.

15. The method of claim 1, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas with a supplied energy between about 5 kJ and about 10 kJ.

16. The method of claim 1, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a discharge frequency between about 10 KHz and about 100 GHz.

17. The method of claim 1, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a discharge frequency between about 13 MHz and about 14 MHz.

18. The method of claim 1, wherein subjecting a substrate to a gas-plasma treatment comprises subjecting the substrate to a reactive gas comprising oxygen for a duration from about 1 minute to less than about 5 minutes, at a temperature of less than about 50 °C and a pressure between about 0.01 torr and about 10 torr, with a supplied energy between about 5 kJ and about 10 kJ and a discharge frequency between about 13 MHz and about 14 MHz.

19. The method of claim 1, wherein the living cells comprise endothelial cells.

20. The method of claim 1, wherein the living cells comprise human aortic endothelial cells.

21. The method of claim 1, wherein the living cells comprise muscle cells.

22. The method of claim 1, wherein the living cells comprise myocardial cells.

23. The method of claim 1, wherein the living cells comprise epithelial cells.

24. The method of claim 1, wherein the cellular product comprises a nucleic acid.

25. The method of claim 1, wherein the cellular product comprises a protein.

26. The method of claim 1, wherein the cellular product comprises β-tubulin.

27. The method of claim 1, wherein the cellular product comprises a growth factor.

28. The method of claim 1, wherein the cellular product comprises vascular endothelial growth factor.

29. The method of claim 1, wherein the cellular product comprises basic fibroblast growth factor.

30. The method of claim 1, wherein the cellular product comprises epidermal growth factor.

31. The method of claim 1, wherein the cellular product comprises platelet-endothelial cell adhesion molecule-1.

32. An implant prepared by a process comprising:

subjecting a substrate to a gas-plasma treatment; and

exposing the substrate to living cells, wherein a portion of the living cells become coupled to the substrate; and

wherein the living cells coupled to the treated substrate produce more of a cellular product than living cells coupled to an untreated substrate.

33. The implant of claim 32, wherein the substrate comprises a biocompatible material.

34. The implant of claim 32, wherein the substrate comprises a polymeric material.

35. The implant of claim 32, wherein the substrate comprises a bioresorbable polymeric material.

36. The implant of claim 32, wherein the substrate comprises a polylactide polymeric material.

37. The implant of claim 32, wherein the substrate comprises a three-dimensional matrix.

38. The implant of claim 32, wherein the substrate comprises a planar solid.

39. The implant of claim 32, wherein the substrate comprises a nonplanar solid.

40. The implant of claim 32, wherein the implant is a medical implant.

41. The implant of claim 32, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas, wherein the reactive gas comprises oxygen.

42. The implant of claim 32, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas, wherein the reactive gas consists essentially of oxygen.

43. The implant of claim 32, wherein a duration of the gas-plasma treatment is from about 1 minute to less than about 5 minutes.

44. The implant of claim 32, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a temperature of less than about 50 °C.

45. The implant of claim 32, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a pressure between about 0.01 torr and about 10 torr.

46. The implant of claim 32, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas with a supplied energy between about 5 kJ and about 10 kJ.

47. The implant of claim 32, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a discharge frequency between about 10 KHz and about 100 GHz.

48. The implant of claim 32, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a discharge frequency between about 13 MHz and about 14 MHz.

49. The implant of claim 32, wherein subjecting a substrate to a gas-plasma treatment comprises subjecting the substrate to a reactive gas comprising oxygen for a duration from about 1 minute to less than about 5 minutes, at a temperature of less than about 50 °C and a pressure between about 0.01 torr and about 10 torr, with a supplied energy between about 5 kJ and about 10 kJ and a discharge frequency between about 13 MHz and about 14 MHz.

50. The implant of claim 32, wherein the living cells comprise endothelial cells.

51. The implant of claim 32, wherein the living cells comprise human aortic endothelial cells.

52. The implant of claim 32, wherein the living cells comprise muscle cells.

53. The implant of claim 32, wherein the living cells comprise myocardial cells.

54. The implant of claim 32, wherein the living cells comprise epithelial cells.

55. The implant of claim 32, wherein the cellular product comprises a nucleic acid.

56. The implant of claim 32, wherein the cellular product comprises a protein.

57. The implant of claim 32, wherein the cellular product comprises β-tubulin.

58. The implant of claim 32, wherein the cellular product comprises a growth factor.

59. The implant of claim 32, wherein the cellular product comprises vascular endothelial growth factor.

60. The implant of claim 32, wherein the cellular product comprises basic fibroblast growth factor.

61. The implant of claim 32, wherein the cellular product comprises epidermal growth factor.

62. The implant of claim 32, wherein the cellular product comprises platelet-endothelial cell adhesion molecule-1.

63. A method of preparing an implant, comprising:

treating a substrate with a gas-plasma treatment, wherein a supplied energy of the gas-plasma treatment is between about 5 kJ and about 10 kJ and a treatment temperature of the gas-plasma treatment is less than about 50

°C; and

exposing the substrate to living cells;

wherein the living cells coupled to the treated substrate produce more of a cellular product than living cells coupled to an untreated substrate.

64. A method of implanting an implant into a person, comprising:

treating a substrate with a gas-plasma treatment such that living cells coupled to the treated substrate produce more of a cellular product than living cells coupled to an untreated substrate; and

implanting the implant into the person.

65. The method of claim 64, further comprising exposing the substrate to living cells prior to implanting the implant.

66. The method of claim 64, wherein the substrate comprises a biocompatible material.

67. The method of claim 64, wherein the substrate comprises a polymeric material.

68. The method of claim 64, wherein the substrate comprises a bioresorbable polymeric material.

69. The method of claim 64, wherein the substrate comprises a polylactide polymeric material.

70. The method of claim 64, wherein the substrate comprises a three-dimensional matrix.

71. The method of claim 64, wherein the substrate comprises a planar solid.

72. The method of claim 64, wherein the substrate comprises a nonplanar solid.

73. The method of claim 64, wherein the implant is a medical implant.

74. The method of claim 64, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas, wherein the reactive gas comprises oxygen.

75. The method of claim 64, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas, wherein the reactive gas consists essentially of oxygen.

76. The method of claim 64, wherein a duration of the gas-plasma treatment is from about 1 minute to less than about 5 minutes.

77. The method of claim 64, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a temperature of less than about 50 °C.

78. The method of claim 64, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a pressure between about 0.01 torr and about 10 torr.

79. The method of claim 64, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas with a supplied energy between about 5 kJ and about 10 kJ.

80. The method of claim 64, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a discharge frequency between about 10 KHz and about 100 GHz.

81. The method of claim 64, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a discharge frequency between about 13 MHz and about 14 MHz.

82. The method of claim 64, wherein subjecting a substrate to a gas-plasma treatment comprises subjecting the substrate to a reactive gas comprising oxygen for a duration from about 1 minute to less than about 5 minutes, at a temperature of less than about 50 °C and a pressure between about 0.01 torr and about 10 torr, with a supplied energy between about 5 kJ and about 10 kJ and a discharge frequency between about 13 MHz and about 14 MHz.

83. The method of claim 64, wherein the living cells comprise endothelial cells.

84. The method of claim 64, wherein the living cells comprise human aortic endothelial cells.

85. The method of claim 64, wherein the living cells comprise muscle cells.

86. The method of claim 64, wherein the living cells comprise myocardial cells.

87. The method of claim 64, wherein the living cells comprise epithelial cells.

88. The method of claim 64, wherein the cellular product comprises a nucleic acid.

89. The method of claim 64, wherein the cellular product comprises a protein.

90. The implant of claim 64, wherein the cellular product comprises β-tubulin.

91. The method of claim 64, wherein the cellular product comprises a growth factor.

92. The method of claim 64, wherein the cellular product comprises vascular endothelial growth factor.

93. The method of claim 64, wherein the cellular product comprises basic fibroblast growth factor.

94. The method of claim 64, wherein the cellular product comprises epidermal growth factor.

95. The method of claim 64, wherein the cellular product comprises platelet-endothelial cell adhesion molecule-1.

96. An implant prepared for implantation into a person by a process comprising treating a substrate with a gas-plasma treatment, such that living cells coupled to the treated substrate produce more of a cellular product than living cells coupled to an untreated substrate.

97. The implant of claim 96, wherein the substrate is exposed to living cells prior to implantation.

98. The implant of claim 96, wherein the substrate comprises a biocompatible material.

99. The implant of claim 96, wherein the substrate comprises a polymeric material.

100. The implant of claim 96, wherein the substrate comprises a bioresorbable polymeric material.

101. The implant of claim 96, wherein the substrate comprises a polylactide polymeric material.

102. The implant of claim 96, wherein the substrate comprises a three-dimensional matrix.

103. The implant of claim 96, wherein the substrate comprises a planar solid.

104. The implant of claim 96, wherein the substrate comprises a nonplanar solid.

105. The implant of claim 96, wherein the implant is a medical implant.

106. The implant of claim 96, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas, wherein the reactive gas comprises oxygen.

107. The implant of claim 96, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas, wherein the reactive gas consists essentially of oxygen.

108. The implant of claim 96, wherein a duration of the gas-plasma treatment is from about 1 minute to less than about 5 minutes.

109. The implant of claim 96, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a temperature of less than about 50 °C.

110. The implant of claim 96, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a pressure between about 0.01 torr and about 10 torr.

111. The implant of claim 96, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas with a supplied energy between about 5 kJ and about 10 kJ.

112. The implant of claim 96, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a discharge frequency between about 10 KHz and about 100 GHz.

113. The implant of claim 96, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas at a discharge frequency between about 13 MHz and about 14 MHz.

114. The implant of claim 96, wherein subjecting a substrate to a gas-plasma treatment comprises subjecting the substrate to a reactive gas comprising oxygen for a duration from about 1 minute to less than about 5 minutes, at a temperature of less than about 50 °C and a pressure between about 0.01 torr and about 10 torr, with a supplied energy between about 5 kJ and about 10 kJ and a discharge frequency between about 13 MHz and about 14 MHz.

115. The implant of claim 96, wherein the living cells comprise endothelial cells.

116. The implant of claim 96, wherein the living cells comprise human aortic endothelial cells.

117. The implant of claim 96, wherein the living cells comprise muscle cells.

118. The implant of claim 96, wherein the living cells comprise myocardial cells.

119. The implant of claim 96, wherein the living cells comprise epithelial cells.

120. The implant of claim 96, wherein the cellular product comprises a nucleic acid.

121. The implant of claim 96, wherein the cellular product comprises a protein.

122. The implant of claim 96, wherein the cellular product comprises β-tubulin.

123. The implant of claim 96, wherein the cellular product comprises a growth factor.

124. The implant of claim 96, wherein the cellular product comprises vascular endothelial growth factor.

125. The implant of claim 96, wherein the cellular product comprises basic fibroblast growth factor.

126. The implant of claim 96, wherein the cellular product comprises epidermal growth factor.

127. The implant of claim 96, wherein the cellular product comprises platelet-endothelial cell adhesion molecule-1.

128. A method of preparing an implant, comprising:

subjecting a polymeric substrate to a gas-plasma treatment, wherein subjecting the substrate to a gas-plasma treatment comprises exposing the substrate to a reactive gas, wherein the reactive gas comprises oxygen, and wherein a supplied energy of the gas-plasma treatment is between about 5 kJ and about 10 kJ, and wherein a treatment temperature of the gas-plasma treatment is less than about 50 °C, and wherein a duration of the gas-plasma treatment is from about 1 minute to less than about 5 minutes, and wherein a discharge frequency of the gas-plasma treatment is between about 13 MHz and about 14 MHz; and wherein a pressure of the gas-plasma treatment is between about 0.01 torr and about 10 torr; and

exposing the substrate to living cells; and

wherein the living cells coupled to the treated substrate produce more of a cellular product than living cells coupled to an untreated substrate.

129. A method of preparing an implant, comprising:

subjecting a substrate to a gas-plasma treatment; and

exposing the substrate to living cells.